INTERRELATIONSHIPS WITH OTHER SUB-ELEMENTS

The General Plan of the City of Sunnyvale is composed of seven elements: Transportation, Community Development, Environmental Management, Public Safety, Socio-Economics, Cultural, and Planning and Management. The Water Resources Sub-Element is part of the Environmental Management Element that includes six other sub-elements: Air Quality, Solid Waste Management, Sanitary Sewer System, Energy, Noise, and Surface Runoff.

There are a total of 24 elements and sub-elements within Sunnyvale's General Plan. The interrelationship of the Water Resources Sub-Element with the goals, policies, and action statements of those elements or sub-elements that are relevant is summarized below:

Land Use Sub-Element

Goal 2.1A: Maintain a pattern of land use which provides for a variety and balance of land uses and that respects the capabilities and limitations of natural and man-made features.

Goal 2.1C: Allow growth and change in the community that can be served within the capacities of existing and planned facilities.

Open Space Sub-Element

Policy 2.2A.4: Implement innovative policies and practices that support the City's leadership in environmental affairs.

Action Statement 2.2A.4a: Continue and expand the current water conservation program, and investigate feasibility of utilizing reclaimed wastewater for irrigation and water features throughout the open space system.

Housing and Community Revitalization Sub-Element

Goal 2.3A: Foster the expansion of the housing supply to provide greater opportunities for current and future residents, given environmental, social, fiscal, and land use constraints.

Policy 2.3A.1: Continue to improve, if feasible, the existing jobs to housing ratio.

Action Statement 2.3A.1b: The City will review the capacity of the infrastructure to accommodate any increase in housing intensity.

Community Design Sub-Element

Action Statement 2.5B.1b: Maintain and provide professionally designed medians with an interesting and attractive variety of ornamental, deciduous, and evergreen trees and plants that are predominantly water-wise and drought resistant.

Action Statement 2.5C.3f: Continue to require adequate, attractive, water-wise, drought-tolerant and efficiently irrigated landscaping, and routinely review landscape standards.

Action Statement 2.5D.2d: Choose water elements, such as fountains or water sculptures, that will look attractive when water is not available because of drought conditions.

Action Statement 2.5D.3c: Cooperate with the City and County of San Francisco on improvements to the Hetch Hetchy right-of-way to make better use of this large open space area.

Sanitary Sewer Sub-Element

Policy 3.3C.4: Study all feasible opportunities of waste-water reuse.

Action Statement 3.3C.4a: Consider the development of a water reuse program.

Surface Runoff Sub-Element

Action Statement 3.4A.2d: When evaluating pollutant control measures, consider all potential impacts including effects on the storm drain system, sanitary sewer system, and groundwater.

Action Statement 3.4C.3b: Monitor compaction, water level, and land surface elevation data compiled by the SCVWD for possible land subsidence.

Energy Sub-Element

Goal 3.5F: Conserve energy through the conservation of potable water.

Policy 3.5F.1: Minimize the amount of unproductive water loss by maintaining an efficient distribution system.

Action Statement 3.5F.1a: Maintain a leak detection and repair program.

Action Statement 3.5F.1b: Maintain potable water pumps in good repair.

Policy 3.5F.2: Promote residential and commercial water conservation.

Action Statement 3.5F.2a: Promote water conservation program that includes: the use of indoor water saving devices; reduced use of appliances that tend to increase water use; water saving outdoor watering devices; landscape with low water requirements.

Action Statement 3.5F.2b: Continue using an escalating rate structure in water consumption fees.

Policy 3.5F.3: Promote water conservation by industrial users.

Action Statement 3.5F.3a: Promote the installation of water meters in individual process units so that high usage areas can be identified.

Action Statement 3.5F.3b: Request that industrial users review their water management methods to ensure that efficient water methods are used.

Action Statement 3.5F.3c: Encourage industrial users to consider water recirculation applications such as cooling towers in their water-using processes.

Action Statement 3.5F.3d: Continue current escalating pricing policy in establishing water rates.

Fire Services Sub-Element

Policy 4.2A.4: Conduct field operations and emergency scene management in a safe, effective, and efficient manner.

Action Statement 4.2A.4c: Maintain liaison with the Department of Public Works to assure an adequate and well-maintained water supply system for fire suppression purposes.

Policy 4.2C.1: Apply demand management principles to control hazards through enforcement of fire and life safety codes, ordinances, permits, and field inspections.

Fiscal Sub-Element

Action Statement 7.1B.2c: Assume the cost of replacing those improvements that were not developer-installed, such as parks, sewers, and water lines. Replacement of water and sanitary sewer lines should be financed through the Water and Sewer Funds. Replacement of streets, sidewalks, and storm drains should be financed by the General Fund.

Action Statement 7.1B.2d: New improvements such as sidewalk, curb and gutter, and water and sewer lines should be funded by those directly benefitting, to the degree benefitted.

Action Statement 7.1B.3b: Water line, sanitary sewer, and storm drain line improvements should be designed and constructed to the size required to serve the City's capacity needs when fully developed. Water and sanitary sewer support systems need not reflect full future demand, but should be designed to accept future load without the need to substantially redesign existing facilities.

GOALS, POLICIES AND ACTION STATEMENTS

The goals and policies for water resources in the City of Sunnyvale are based on the findings presented in the Community Conditions section.

GOAL 3.1A: MANAGE FUTURE DEMANDS TO ENSURE THAT EXISTING AND REALISTICALLY CERTAIN FUTURE WATER SUPPLIES WILL BE ADEQUATE.

Policy 3.1A.1 Contract for water supplies based on projected reasonable demands.

Action Statements

3.1A.1a Negotiate for long-term supply commitments, using future demands as forecasted by the latest hydraulic network analysis and/or staff estimates.

3.1A.1b Support reasonable, cost-effective, and environmentally sound water supply enhancement projects of San Francisco Water Department/Hetch Hetchy and Santa Clara Valley Water District.

Policy 3.1A.2 Purchase potable water utilizing the most cost-effective source(s), subject to contractual requirements with our suppliers.

Action Statements

3.1A.2a Provide system controls that can respond to demand while also optimizing the mix of all sources in a cost-effective manner.

3.1A.2b Establish operating parameters that maximize water units in areas where costs are the least.

Policy 3.1A.3 Maintain a cost-effective preventative maintenance program that provides for sufficient reliability of all potable and reclaimed water system facilities.

Action Statements

3.1A.3a Perform preventative maintenance on all system facilities in order to eliminate the need for major unscheduled repairs or replacements.

3.1A.3b Provide for periodic inspection and assessment of system facilities.

3.1A.3c Maintain accurate and up-to-date records and maps.

3.1A.3d Provide for coordination with other utilities as required.

3.1A.3e Test, repair, and replace water meters pursuant to established standard frequencies.

3.1A.3f Respond to all customer concerns and inquiries.

3.1A.3g Assure all facilities are properly screened, landscaped, and maintained so as not to detract from neighboring developments.

3.1A.3h Provide appropriate security and protection of water facilities.

3.1A.3i Test and repair hydrants pursuant to established standard frequencies.

GOAL 3.1B ENSURE THAT POTABLE AND RECLAIMED WATER MEET ALL QUALITY AND HEALTH STANDARDS.

Policy 3.1B.1 Ensure that backflow from potentially contaminated water services is prevented through an aggressive inspection and maintenance program.

Action Statements

3.1B.1a Ensure that adequate backflow prevention devices are installed as required.

3.1B.1b Monitor annual backflow devices testing program.

3.1B.1c Perform backflow investigations and inspections as required.

3.1B.1d Investigate the potential for the City owning all backflow devices, thereby ensuring proper function and maintenance.

Policy 3.1B.2 Develop a comprehensive water quality monitoring program that meets or exceeds all state and federal requirements, while also meeting specific needs of the City and our citizens.

Action Statements

3.1B.2a Establish parameters to be tested for, together with specific testing frequencies and scheduling.

3.1B.2b Provide adequate laboratory testing facilities.

3.1B.2c Provide adequate training for quality sampling and testing.

3.1B.2d Provide the public with information relative to the City's water quality program, bottled water, home water filtering devices, private wells, etc.

3.1B.2e Respond to customer concerns and inquiries.

3.1B.2f Monitor state and federal legislation to ensure that the City's sampling and testing procedures meet all requirements.

Policy 3.1B.3 Develop an action plan to respond to and protect from contamination of water supplies.

Action Statements

3.1B.3a Monitor all known underground contaminations.

3.1B.3b Ensure responsible parties are taking all reasonable steps to clean up known underground contaminations.

31B.3c Ensure responsible enforcement agencies are taking all reasonable steps to have responsible parties clean up known underground contaminations.

3.1B.3d Ensure all business and industry and complying with the City's hazardous materials storage ordinance.

3.1B.3e Maintain an emergency action plan to isolate and prohibit the delivery of known or suspected contaminated water to customers.

3.1B.3f Maintain a program to notify customers to known or suspected contaminated water and of the City's action plan.

3.1B.3g Work with the Santa Clara Valley Water District to identify all private wells in the City.

3.1B.3h Advise owners of private wells of health risks, adequate quality testing, etc., and encourage proper abandonment of the wells where appropriate.

3.1B.3i Encourage owners of private wells that do not have City water service to properly abandon their wells and hook up to the City's water system.

GOAL 3.1C: DURING EMERGENCY CONDITIONS, ENSURE THAT THE WATER DISTRIBUTION SYSTEM CAN MEET MINIMUM FIRE SUPPRESSION AND QUALITY STANDARDS.

Policy 3.1C.1 Maintain an emergency water operations plan.

Action Statements

3.1C.1a Maintain sufficient emergency interties with other water utilities.

3.1C.1b Develop and maintain standard operating procedures for responding to losses of supply or water contamination events.

3.1C.1c Develop and maintain standard operating procedures for notifying the public during losses of supply or water contamination events.

Policy 3.1C.2 Provide sufficient storage and backup power to meet minimum requirements for water during emergencies.

Action Statements

3.1C.2a Periodically check the adequacy of storage facilities and distribution system through a computer modeling program (hydraulic network analysis).

3.1C.2b Study need for additional backup power at key water facilities.

GOAL 3.1D MANAGE POTABLE WATER DEMAND THROUGH THE EFFECTIVE USE OF WATER RATES, CONSERVATION PROGRAMS AND RECLAIMED WATER.

Policy 3.1D.1 Provide for an on-going potable water conservation program.

Action Statements

3.1D.1a Monitor unaccounted-for water and notify Finance when percentages exceed norms.

3.1D.1b Support demand management programs identified as "Best Management Practices (BMPs)" in our Memorandum of Understanding with the State Department of Water Resources.

3.1D.1c Update the City's Urban Water Management Plan as required by the State.

3.1D.1d Inform the community periodically on the status of water supply and the need to conserve.

3.1D.1e Maintain current inverted rate structure policy.

Policy 3.1D.2 Provide for potable water conservation programs that will effectively respond to periods of water shortages/droughts.

Action Statements

3.1D.2a Implement staged water conservation plans similar to those implemented during the 1987-1992 drought, depending on the severity of future water shortages.

3.1D.2b Implement water usage restrictions tailored to the level of conservation required.

3.1D.2c Keep the community regularly advised as to the status of the water shortage emergency, how they can achieve conservation goals, and the community's progress toward those goals.

3.1D.2d Coordinate drought planning with other involved agencies.

Policy 3.1D.3 Expand opportunities for reclaimed water use consistent with ecology needs of the Bay and/or diminished potable water supplies.

Action Statements

3.1D.3a Complete Phases I and II of the existing Reclaimed Water Project.

3.1D.3b Consider expanding this project into Phase III and beyond.

3.1D.3c Pursue funding for existing and future projects.

3.1D.3d Provide information and assistance to potential reclaimed water customers.

3.1D.3e Monitor use and effectiveness of reclaimed water on turf and landscaping.

GOAL 3.1E MAINTAIN A FINANCIALLY STABLE WATER FUND THROUGH A USER-BASED FEE SYSTEM THAT FUNDS OPERATION, CAPITAL IMPROVEMENTS, INFRASTRUCTURE REPLACEMENT AND PUBLIC EDUCATION PROGRAMS.

Policy 3.1E.1 Establish potable and reclaimed water rate structures that will ensure funding of capital improvements, operational and maintenance needs, and the development of an adequate infrastructure replacement reserve.

Action Statements

3.1E.1a Review rates annually.

3.1E.1b Establish appropriate reserves to ensure stable rates and provide for capital improvement and infrastructure replacement needs.

3.1E.1c Review Ten-Year Plan annually for capital improvement and infrastructure replacement needs.

3.1E.1d Ensure that the City receives 100% of utility entitlement by preparing utility bills accurately and by providing on-going monitoring for the completeness and accuracy of and collection of utility billings.

3.1E.1e Provide timely initiation, discontinuance, and changes in water services.

Policy 3.1E.2 Establish rate structures that encourage on-going potable water conservation and that can be modified to achieve even greater levels of water conservation during period of water shortages/droughts.

Action Statements

3.1E.2a Establish reclaimed water rates in such a way as to attract customers.

3.1E.2b Utilize inverted rate scenarios to achieve both on-going and severe water conservation goals.

Policy 3.1E.3 Establish and maintain adequate reserve levels to replace or renovate Water Fund infrastructure components in order to maximize asset life and meet future community needs.

Action Statements

3.1E.3a Maintain and periodically update an inventory of Water Fund infrastructure components.

3.1e.3b Establish, maintain and review infrastructure renovation and replacement fund schedules for the water distribution system.

GOAL 3.1F PROVIDE A CUSTOMER SERVICE PROGRAM THAT EMPHASIZES CUSTOMER SATISFACTION AND CONFIDENCE.

Policy 3.1F.1 Maintain the provision of a high quality, dependable source of both potable and reclaimed water at a reasonable and competitive cost to the consumer.

Action Statements

3.1F.1a Expand opportunities for cost savings in operations and maintenance.

3.1F.1b Oppose unreasonable rate increases from the City's suppliers.

3.1F.1c Notify the community regarding Sunnyvale's water rates, how they were developed, and how they compare with neighboring utilities.

Policy 3.1F.2 Inform customers on issues relating to water supply, quality, rates, conservation, and other matters.

Action Statements

3.1F.2a Utilize bill stuffers, cable TV, direct mailers, civic events, and other media to inform customers on water resource issues.

3.1F.2b Conduct public/neighborhood meetings when and where appropriate.

3.1F.2c Continue to produce and distribute the annual water quality report.

Policy 3.1F.3 Solicit customer input through consumer surveys, City-wide events, and other forums.

Action Statements

3.1F.3a Insert customer input surveys into selected quarterly reports, bill stuffers, door knob hangers, etc.

3.1F.3b Hand out survey forms at selected City-wide events, at neighborhood meetings, schools, and other forums.

Policy 3.1F.4 Monitor customer satisfaction through periodic surveys and responses to citizen inquiries.

Action Statements

3.1F.4a Track customer compliments and complaints from phone calls, letters, etc.

3.1F.4b Distribute customer satisfaction surveys during work activities, by mail, or by other delivery systems.

3.1F.4c Incorporate results of customer services into measurement of desired service levels and/or outcomes measures.

Policy 3.1F.5 Train and encourage employees to develop a customer service work ethic.

Action Statements

3.1F.5a Provide on-going customer service training to employees.

3.1F.5b Incorporate customer service performance into all employee audit processes.

3.1F.5c Develop means to reward outstanding customer service by employees.

GOAL 3.1G SUPPORT LEGISLATION AND OTHER EFFORTS THAT PROMOTE THE ACCOMPLISHMENT OF THE CITY'S WATER RESOURCES SUB-ELEMENT GOALS AND POLICIES.

Policy 3.1G.1 Support efforts by both the federal and state governments to work cooperatively with municipal governments to ensure safe drinking water.

Action Statements

3.1G.1a Work through the various water utility professional organizations (AWWA, CMUA, BAWUA, etc.) to promote collaborative working relationships with state and federal drinking water authorities (EPA, DOHS, etc.).

3.1G.1b Work through lobbying organizations (LCC, CMUA, SCVWD, SFWD, etc.) to develop networks with state and federal agencies.

3.1G.1c Support legislation that promotes better cooperation between state and federal governments and municipal governments.

Policy 3.1G.2 Seek support for federal and state funding of Sunnyvale's water resources projects and programs.

Action Statements

3.1G.2a Continue to pursue funding of reclaimed water projects through SCVWD, SFWD, and state and federal grants.

3.1G.2b Monitor and pursue other available funding for major capital improvements and infrastructure replacement projects.

Policy 3.1G.3 Oppose efforts to unreasonably reduce the availability of water supply to Sunnyvale.

Action Statements

3.1G.3a Oppose efforts by the federal government to eliminate Hetch Hetchy reservoir.

3.1G.3b Oppose legislation that unreasonably diverts existing water supplies from municipalities to other uses.

3.1G.3c Oppose legislation that would block proposed water supply projects that are necessary, reasonable, cost-effective, and environmentally sound.

Policy 3.1G.4 Support efforts to encourage reasonable demand side water conservation programs.

Action Statements

3.1G.4a Support on-going state and local water conservation efforts and support legislation encouraging the installation of reasonable water conservation devices in a building prior to transfer of title, provided there is some economic impact criteria.

3.1G.4b Oppose legislation requiring cities and counties to conduct a water supply analysis every three years.

3.1G.4c Work with SFWD, SCVWD, and other retailers to support ULFT rebate programs, showerhead giveaways, and other BMPs.

Policy 3.1G.5 Support legislation that would allow greater flexibility for water transfers, subject to protection of water rights and any adverse impacts on affected communities.

Action Statements

3.1G.5a Support legislation that authorizes any retail water user with a water allocation to transfer that allocation to another user, and work with water agencies to devise a means of effective transfer that will not risk existing water rights, but rather augment supplies that are severely impacted by drought, and encourage the federal government to consider similar legislation.

Policy 3.1G.6 Support legislation and regulations that establish beneficial water quality standards that are based on scientific facts, benefit-risk analyses, and other supportable evidence.

Action Statements

3.1G.6a Support efforts by Congress to direct the EPA to give to the state the flexibility to adopt toxicity standards based on site-specific conditions, which will provide reasonable, cost-effective protection to aquatic organisms and human health. Support a more cooperative approach between all levels of government and the private sector to determine environmental priorities and standards.

3.1G.6b Support a moratorium on the promulgation and implementation of drinking water regulations under the Safe Drinking Water Act until such time as studies are completed and the reauthorization of the Act is carried out.

3.1G.6c Oppose any water quality legislation or regulations that are not based on scientific evidence and/or do not provide measurable improvements in public health.

1995/96 Water Rate Blocks[1]

Category	Rate Block, 100 Cubic Feet						
	1	2	3	4	5	6	7
Residential	1 - 6	7 - 33	34 - 50	51 +			
Apartment	1 - 4	5 - 23	24 - 35	36 +			
Commercial	1 - 6	7 - 20	21 - 50	51 - 500	501 - 1250	1251 - 2500	2501 +
Industrial	1 - 6	7 - 20	21 - 50	51 - 500	501 - 1250	1251 - 2500	2501 +
Landscape	1 +						
Fire Line	1 - 6	7 - 20	21 - 50	51 - 500	501 - 1250	1251 - 2500	2501 +
Agriculture	1 +						
Under Construction	1 - 6	7 - 20	21 - 50	51 - 500	501 - 1250	1251 - 2500	2501 +
Institutional	1 +						

[1]Unshaded portions of the table represent the lifeline rate block, and shaded portions represent the conservation rate blocks. The lifeline rate block is a minimum rate for the basic water usage requirements of customers.

Water Supply and Distribution Monitoring Information Program for Water Analysis Plan

General System Information

There are three sources of water: The San Francisco Water Department Hetch Hetchy System with six connections; the Santa Clara Valley Water District with two connections and eight City owned wells.

The City of Sunnyvale's Distribution System is a pressure maintained system for which the Supervisory Control & Data Acquisition (SCADA) system is located in the Department of Public Work's Corporation Yard, 221 N. Commercial Avenue.

Pressure sensed at several locations within the system is monitored and recorded. The SCADA system then can activate pumping stations and supply valves to ensure consistent water supply to Sunnyvale's residents.

Zone I consists mostly of Hetch Hetchy water, north of El Camino Real. The central and southern parts of the zone receive a mixture of Hetch Hetchy and well-water. The Schroeder and Central wells are located approximately in the central section of this zone.

Zone II also consists of a mixture of Hetch Hetchy water and well-water. The Losse, Raynor, Ortega, Hamilton (two wells), and Serra wells are in this zone.

Zone III is served primarily by Santa Clara Valley Water District, with only the Westmoor well in this zone. Santa Clara Valley Water District water enters Zone III from two separate turnouts: one at the Wright Plant, and the other on Barranca Avenue, south of Homestead.

In the event of any interruption in service from the Santa Clara Valley Water District water into Zone III, there are a series of Cla-Valves, equipped with reverse flow features that allow water from Zone II to enter Zone III and maintain equivalent pressures within the zone until Santa Clara Valley Water District water service is restored. County water also enters a portion of the southeast end of Zone II, from Zone III, through a pressure regulating valve to maintain pressures in that area. In addition, there are emergency interconnects with Mountain View, Cupertino, Santa Clara, and Cal Water Service, one of which is automatic. The rest of the interconnects are based on pressure differential.

Pressures are maintained within the three zones by pressure regulating valves that regulate flows on source lines or from booster pump stations to the respective zones.

Storage capacity of 27.5 million gallons is distributed through the system in five ground level reservoirs constructed of welded steel.

City personnel assigned to the Water Program are scheduled on a continuing and standby basis to maintain the system at the highest level of service.

General

The City of Sunnyvale shall maintain records on all water quality complaints received and corrective action taken. This information will be held by the City's Water Section for a period of at least five years for bacteriological analyses and for at least ten years for chemical analysis, for Department of Health Services review.

System Sampling

A. Bacteriology:

There are 27,371 service connections serving a population of 125,800 according to the latest census. The minimum number of samples required is 25 per week; 46 samples are collected from stations in each of the three pressure zones in the system. These sampling points are within the distribution system and will represent "as delivered" water.

Weekly samples are also collected from each operating well, imported water connection, and water storage tank. These 26 additional samples are reported also and reflect the total bacteriological load.

Frequency: Weekly

Stations: Distribution system, imported sources, wells in operation and storage tanks (see Attachment 1).

Analysis:
1) coliform - total and fecal
2) total bacterial count

Method:
1) MPN by multiple tube fermentation
2) SPC per "Standard Methods"

The City's Laboratory prepares sterile sample bottles containing thiosulfate. Distribution System personnel are thoroughly trained by certified laboratory staff to collect the water samples each week. Collected samples are held in a chilled ice chest prior to delivery to the lab for analysis.

Repeat sample sets are collected within 24 hours of a positive total coliform analysis. All repeat samples are collected within ± 5 service connections of the original sample site. Each repeat sample set includes: (1) one sample from the original sample site, (2) one sample upstream within five service connections, and (3) one sample downstream within five service connections.

If one or more samples in the repeat sample set are total coliform-positive, an additional set of repeat samples is collected. This process is repeated until either no coliforms are detected in one complete repeat sample set or the MCL for total coliforms is exceeded.

Sunnyvale will immediately notify the Department of Health Services if a significant rise in bacterial count occurs. Any of the following events will indicate a possible significant rise:

(1) a total coliform-positive routine sample followed by two total coliform positive repeat samples
(2) a sample that is positive for fecal coliform
(3) the total coliform maximum contamination level is exceeded

Sunnyvale will report immediately to the Department of Health Services when a "MCL" violation occurs. Any of the following events will be considered a violation:

(1) when more than 5% of the samples collected during the month are total coliform-positive (5% of 184 samples equals 9 total coliform positives)
(2) when any repeat sample is fecal coliform-positive
(3) when any repeat sample following a fecal coliform positive routine sample is total coliform-positive

Sunnyvale will report the month's analytical results by the tenth day of the following month. Copies of bacteriological monitoring results for all positive routine samples and all repeat samples will be submitted directly to the Department of Health Services. All reports will be retained in the Sunnyvale files for a period of five years.

Sunnyvale will request the Department of Health Services to invalidate a sample: (1) for which a total coliform-positive has been obtained: (a) if all repeat samples collected at the same tap as the original total coliform-positive samples are also total coliform-positive and all repeat samples collected within five service connections of the original tap are not coliform-positive; or (b) if prescribed analytical methods were not

followed, in which case the following will be provided:

a. Laboratory Invalidation Error Letter
b. Sample Identification
c. Description of Accident or Error
d. Copies of Pertinent Records
e. Lab Observations

(2) for which no total coliform-positive has been obtained if the laboratory suspects interferences with the analysis.

B. Disinfectant Residual Monitoring

The total number of distribution system sample points mostly under the influence of imported surface water is 31. Chlorine residual samples are collected concurrent with bacteriological samples, and both chlorine residual and HPCs are reported for surface water-influenced sample stations.

Frequency: Weekly

Stations: Distribution system, imported sources, wells in operation, and storage tanks (see Attachment 2).

Analysis: 1) Chlorine residual - free and total
2) HPC

Method: 1) HACH - DPD field kit
2) Standard Methods 907A

C. Water Quality - Physical/Aesthetics:

Frequency: Weekly

Stations: Same as for disinfectant residual monitoring

Analysis: (1) Taste
(2) Odor
(3) Color
(4) Turbidity
(5) pH
(6) Temperature °F

Method: (1) Taste threshold test
(2) Threshold odor test

(3) Chloroplatinate standard/HACH DR/3
(4) NTU- HACH model
(5) Units
(6) Field test - calibrated thermometer

D. Water Quality - Hardness:

Frequency: Quarterly (to correspond with TTHM testing)

Stations: Distributions system, wells in operation, imported sources

Analysis: Total Hardness

Method: EDTA titration

E. Total Trihalomethanes:

Frequency: Quarterly

Stations: Four samples per treatment plant. The imported sources of water constitute two treatment plants for the City. The City-owned wells are not chlorinated.

(1) 25% of samples will be taken at extreme ends of the distribution system

(2) 75% at locations representative of population distribution

Analysis: Total trihalomethanes by GC

Method: EPA Method 502.2

F. Chemistry/Chemical Quality:

1. General Physical/Mineral/Inorganic

Frequency: Three-year intervals: on a consecutive rotational basis, three well sources per year for all parameters except Asbestos and Nitrate. Asbestos: one sample every nine years. Nitrate: one sample every year, with frequency increasing to quarterly samples if results are >50% of the MCL (MCL is 10 mg/L).

Stations: Water sources: City-owned wells only (Imported water shall be the responsibility of the wholesaler: Title 22:64437)

Analysis: a) General Physical/Mineral: Total Hardness, Calcium, Magnesium, Sodium, Potassium, Total Alkalinity, Hydroxide, Carbonate, Bicarbonate, Sulfate, Chloride, Nitrate (NO_3), Fluoride, pH, Specific Conductance, Total Filterable Residue, Apparent Color, Odor Threshold, MBAS

b) Inorganic Chemical: Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Iron, Lead, Manganese, Mercury, Nickel, Selenium, Silver, Thallium, Zinc

c) Additional Analyses: Asbestos, Boron, Nitrate (NO_3), Nitrite (NO_2), Cyanide, Ammonia, Nitrogen

Method: As prescribed by Federal Register: Primary Drinking Water Standards, and "Standard Methods"

2. Radiochemicals:

Frequency: 4-year intervals, 4 quarterly samples: on a consecutive rotational basis, three well sources per year.

Stations: Water sources: City-owned wells only (Imported water shall be the responsibility of the wholesaler).

Analysis: a) Gross alpha particle activity
b) Gross beta particle activity

4. VOCs:

Frequency: Monthly

Stations: Water sources: City-owned wells only (imported water shall be the responsibility of the wholesaler: Title 22:64437)

Analysis: Volatile Organic Chemicals (see Attachment 3)

Method: EPA Method 502.2

5. SOCs:

Frequency: Initial monitoring waived based on past non-detect results. Repeating monitoring is two quarterly samples every three years beginning in 1996.

Stations: Water sources: City-owned wells only (Imported water shall be the responsibility of the wholesaler: Title 22:64437)

Analysis: Synthetic Organic Chemicals (see Attachment 4)

Method: As prescribed by Federal Register: Primary Drinking Water Standards

Date of Sampling _____
Time of Sampling _____
Date of Analysis _____
Time Analysis - Begin _____

Time Analysis - End _____
Preservative _____
Comp Method _____
Analyst _____

ATTACHMENT 1

CITY OF SUNNYVALE
BACTERIOLOGY ANALYSIS OF POTABLE WATER

Source	Presumptive*		Confirm		EC	P/A	HPC	Comments/
1. Arques & DeGuigne								
2. Duane & Lawrence Exp.								
3. Manzano								
4. Reamwood & Elko								
5. Lawrence Hetch-Hetchy								
6. Meadowlake								
7. Fairoaks Hetch-Hetchy								
8. Oakmead Parkway								
9. Uranium								
10. Kifer & Calabazas								
11. Kifer & San Ysidro								
12. Aster								
13. Sequoia & Bluebonnet								
Wolfe/Evelyn Storage Tank								
14. Jackpine Ct								
Ponderosa & Rosette Ct.								
16. Lily & Lawrence Exp.								
17. Fremont & Wolfe Park								
18. Poplar & Bryant								
19. Raynor Well								
20. Waxwing & Lochinvar								
21. Peacock & Homestead								
22. Homestead & Bluejay								
23. Ortega Well								
24. Wolfe & Inverness								
25. Rembrandt & Crescent								
26. Dunholme & Floyd								
27. Sidney & Belfry								
28. Hollenbeck & Sheraton								
29. 814 Quetta								
30. Mango & Remington								
31. Fremont & Mary (S/E)								
32. Cascade & Bonneville								
33. Serra Well								
34. Westmoor Well								

Method: Absence/Presence - 100 ml/sample - 5 tubes/sample - 20 ml/tube

uryl Tryptose Broth

Grey shaded areas are **NOT** compliance monitoring samples

Date of Sampling _____
Time of Sampling _____
Date of Analysis _____
Time Analysis - Begin _____

Time Analysis - End _____
Preservative _____
Comp Method _____
Analyst _____

CITY OF SUNNYVALE
BACTERIOLOGY ANALYSIS OF POTABLE WATER

Source	Presumptive*		Confirm		EC	P/A	HPC	Comments/
35. Wright & LaSalle								
36. Wright Plant (SCVWD)								
Wright Storage Tank								
37. Baranca (SCVWD)								
38. The Dalles & Belleville								
39. 1397 Bedford								
40. Hamilton-2 Well								
41. Hamilton-3 Well								
Hamilton Storage Tank								
42. Losse Well								
43. Bernardo & Parkington								
44. 146 Acalanes								
Mary-Carson Storage Tank								
45. Olive & Mary S/W corner								
46. Sunset & Washington								
47. Washington Park								
48. S. Frances & Olive								
El Camino & Murphy								
Washington & Carroll								
51. Central Well								
Central Storage Tank								
52. Schroeder Well								
53. Bishop School								
54. Morse & Waddington								
55. Hermosa off Pastoria								
56. Palomar Hetch-Hetchy								
57. Mary Hetch-Hetchy								
58. Lockheed Hetch-Hetchy #1								
59. Lockheed Hetch-Hetchy #2								
60. Borregas Hetch-Hetchy								
61. Borregas & Persian (S/E)								
62. Fairoaks & Tasman (N/E)								
63. Java & Channel								
64. Caribbean & E. Channel								
PLANT SAMPLES								
Scullery								
Admin Bldg Fountain								
Kitchen Sink								
MO								

hod: Absence/Presence - 5 tubes/sample - 20 ml/tube - 100 ml/sample

* Lauryl Tryptose Broth

Grey shaded areas are **not** compliance monitoring samples

Date of Sampling _____
Time of Sampling _____
Date of Analysis _____
Time Analysis - Begin _____

Time Analysis - End _____
Preservative _____
Comp Method _____
Analyst _____

ATTACHMENT 2

CITY OF SUNNYVALE
CHLORINE RESIDUAL ANALYSIS OF POTABLE WATER

Source	Chlorine		Temperatur
1. Arques & DeGuigne			
2. Duane & Lawrence Expy			
3. Manzano			
4. Reamwood & Elko			
5. Lawrence Hetch-Hetchy			
6. Meadowlake			
7. Fairoaks Hetch-Hetchy			
8. Oakmead Parkway			
9. Uranium			
10. Kifer & Calabazas			
11. Kifer & San Ysidro			
12. Aster			
13. Sequoia & Bluebonnet			
Wolfe/Evelyn Storage Tank			
14. Jackpine Ct.			
15. Ponderosa & Rosette Ct.			
16. Lily & Lawrence Expy.			
17. Fremont & Wolfe Park			
18. Poplar & Bryant			
19. Raynor Well			
20. Waxwing & Lochinvar			
21. Peacock & Homestead			
22. Homestead & Bluejay			
23. Ortega Well			
24. Wolfe & Inverness			
25. Rembrandt & Crescent			
26. Dunholme & Floyd			
27. Sidney & Belfry			
28. Hollenbeck & Sheraton			
29. 814 Quetta			
30. Mango & Remington			
31. Fremont & Mary (S/E)			
32. Cascade & Bonneville			
33. Serra Well			
34. Westmoor Well			

Remarks:

Grey shaded areas are **not** compliance monitoring samples

Date of Sampling _____
Time of Sampling _____
Date of Analysis _____
Time Analysis - Begin _____

Time Analysis - End _____
Preservative _____
Comp Method _____
Analyst _____

CITY OF SUNNYVALE
CHLORINE RESIDUAL ANALYSIS OF POTABLE WATER

Source	Chlorine		Temperatur
35. Wright & LaSalle			
36. Wright Plant (SCVWD)			
Wright Storage Tank			
37. Baranca (SCVWD)			
38. The Dalles & Belleville			
39. 1397 Bedford			
40. Hamilton-2 Well			
41. Hamilton-3 Well			
Hamilton Storage Tank			
42. Losse Well			
43. Bernardo & Parkington			
44. 146 Acalanes			
Mary Carson Storage Tank			
45. Olive & Mary (S/W)			
46. Sunset & Washington			
47. Washington Park			
48. S. Frances & Olive			
49. El Camino & Murphy			
50. Washington & Carroll			
51. Central Well			
Central Storage Tank			
52. Schroeder Well			
53. Bishop School			
54. Morse & Waddington			
55. Hermosa off Pastoria			
56. Palomar Hetch-Hetchy			
57. Mary Hetch-Hetchy			
58. Lockheed Hetch-Hetchy #1			
59. Lockheed Hetch-Hetchy #2			
60. Borregas Hetch-Hetchy			
61. Borregas & Persian (S/E)			
62. Fairoaks & Tasman (N/E)			
63. Java & Channel			
64. Caribbean & E. Channel			

Remarks:

Grey shaded areas are **NOT** compliance monitoring samples

Attachment 3

Volatile Organic Chemicals (VOCs)
City of Sunnyvale - 4310014

Benzene
Carbon Tetrachloride
1,2-Dichlorobenzene
1,4-Dichlorobenzene
1,1-Dichloroethane
1,2-Dichloroethane
1,2-Dichloroethylene
cis-1,2-Dichloroethylene
trans-1,2-Dichloroethylene
Dichloromethane
1,2-Dichloropropane
1,3-Dichloropropane
Ethylbenzene
Monochlorobenzene
Styrene
1,1,2,2-Tetrachloroethane
Tetrachloroethylene
Toulene
1,2,4-Trichlorobenzene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethylene
Trichlorofluoromethane
1,1,2-Trichloro-1,2,2-Trifluoromethane
Vinyl Chloride
Xylenes

Attachment 4

Synthetic Organic Chemicals (SOCs)
City of Sunnyvale - 4310014

Alachlor (Lasso)
Atazine
Bentazon
Benzo(a) pyrene
Carbofuran
Chlordane
2,4-D
Dalapon
1,2-Dibromo-3-chloropropane (DBCP)
Di(2-ethylhexyl)adipate
Di(2-ethylhexyl)pthalate (DEHP)
Dinoseb
Diquat
Endothal
Endrin
Ethylene Dibromide (EDB)
Heptachlor
Heptachlor Epoxide
Glyphosate
Hexachlorobenzene
Hexachlorocyclopentadiene
Lindane
Methoxychlor
Molinate
Oxamyl (Vydate)
Pentachlorophenol
Picloram
Polychlorinated Biphenyls (PCBs)
Simazine
Thiobencarb
Toxaphene
2,3,7,8-TCDD (Dioxin)
2,4,5-TP

Appendix C: 1986 Action Statement Summary

The following matrix summarizes what has been accomplished in response to each of the action statements in the original 1986 Water Resources Sub-Element.

Action Statement	Staff Responsibilities	Accomplishments
Goal 3.1A: Ensure potable water is available in sufficient quantity and pressure to meet the City's existing and future demands, and respond to emergency conditions.		
Policy 3.1A.1: Purchase Hetch Hetchy and Santa Clara Valley Water District water in amounts dictated by existing and future demands, and economics.		
3.1A.1a: Negotiate for long-term supply commitments.	Worked with SFWD and SCVWD staff on long-term water supply contracts.	1. Contract with SFWD valid until 2009. 2. Contracts with SCVWD negotiated every 3 years. Next contract to start FY 1996/97.
3.1A.1b: Provide system controls that can respond to demand while also optimizing the mix of all sources of water in a cost-effective manner.	Upgrade SCADA system to provide for cost-optimization of sources, while meeting pressure and demand needs of customers.	New SCADA software currently being installed (1995).
3.1A.1c: Support legislation that would enhance the availability of adequate water from Sunnyvale's existing sources of supply.		1. Successfully opposed Secretary Hodell's proposal to remove the Hetch Hetchy reservoir. 2. Supporting SCVWD's efforts to develop a new out-of-county reservoir.
Policy 3.1A.2: Develop and operate City wells as dictated by existing and future demands and economics.		
3.1A.2a: Study need for additional wells.	Conduct Hydraulic Network Analysis.	Analysis completed 1/95. Two existing wells no longer needed. Reviewing plans for abandoning or placing these wells on inactive status.
3.1A.2b: Provide system controls that can respond to demand while also optimizing mix of all sources of water in a cost-effective manner.	(See 3.1A.1b)	

Action Statement	Staff Responsibilities	Accomplishments
Policy 3.1A.3: Ensure water system can adequately handle emergencies.		
3.1A.3a: Ensure adequacy of water storage facilities based upon peak demands and required fire flows.	Conduct Hydraulic Network Analysis.	The 1995 analysis shows that the City has adequate storage.
3.1A.3b: Ensure adequacy of the distribution system to meet fire flow requirements.	Conduct Hydraulic Network Analysis.	The 1995 analysis shows that the City's distribution system is adequate.
3.1A.3c: Maintain sufficient emergency interties with other water utilities.	Look for necessary interties with neighboring water utilities.	Interties now exist between Sunnyvale and Mountain View, Santa Clara, Cupertino, and Cal Water.
Policy 3.1A.4: Develop a cost-effective preventative maintenance program that provides for sufficient reliability of all water system facilities.		
3.1A.4a: Perform preventative maintenance on all system facilities in order to eliminate the need for major unscheduled repairs or replacements.	On-going.	On-going.
3.1A.4b: Provide for periodic inspection and assessment of system facilities.	On-going.	On-going.
3.1A.4c: Maintain accurate and up-to-date records and maps.	On-going.	On-going.
3.1A.4d: Provide for coordination with other utilities as required.	On-going.	On-going.
3.1A.4e: Test, repair, and replace water meters pursuant to established standard frequencies.	On-going.	On-going.
3.1A.4f: Respond to all customer concerns and inquiries.	On-going.	On-going.

Action Statement	Staff Responsibilities	Accomplishments
3.1A.4g: Assure all facilities are properly screened, landscaped, and maintained so as not to detract from neighboring developments.	On-going.	On-going.
3.1A.4h: Provide appropriate security and protection of water facilities.	On-going.	On-going.
3.1A.4i: Test and repair hydrants pursuant to established standard frequencies.	On-going.	On-going.
Goal 3.1B: Develop a comprehensive water conservation plan.		
Policy 3.1B.1: Provide for an on-going water conservation program.		
3.1B.1a: Monitor for system losses.	Establish a leak detection program and monitor for "missing" water.	Leak detection audits are performed as required. "Missing" water percentages are well within expected ranges.
3.1B.1b: Develop a public awareness program for conservation.	Provide articles to the media, use of quarterly reports, bill stuffers, etc.	Many drought brochures, articles, etc., sent out during the six-year drought. Efforts to encourage on-going conservation continuing, as with the ULFT rebate and free showerhead program.
3.1B.1c: Maintain current inverted rate structure policy.	Staff recommended various versions of this during the drought.	Still in place in 1995.
3.1B.1d: Support legislation that provides an adequate supply of water throughout the State and that guarantees reasonable water conservation and environmental protection.		Sunnyvale initiated the current League of California Cities policy on water conservation.
Policy 3.1B.2: Develop an emergency water conservation plan.		

Action Statement	Staff Responsibilities	Accomplishments
3.1B.2a: Develop an emergency plan for periods of severe drought.	Develop "staged" conservation plans including water usage restrictions, rates, etc.	Several of these "staged" plans were implemented during the 1987-1992 drought.
3.1B.2b: Develop an emergency plan in case of loss of one or more major sources of supply.	Include in Hydraulic Network Analysis work plan.	Completed.
3.1B.2c: Develop a plan in case of contamination of one or more sources of supply.	Develop an action plan for the control of contaminated water.	Action plan completed in 1988.
3.1B.2d: Coordinate planning with local, state and federal agencies.	On-going.	On-going.
Policy 3.1B.3: Study all feasible opportunities for water reuse consistent with ecology needs of the Bay.		
3.1B.3a: Consider the development of a water reuse program.	Staff to review.	Water reuse (reclamation) project currently budgeted and underway. Existing project will potentially offset 10% of current water demands.
3.1B.3b: Periodically assess financial viability of water reuse projects identified in Water Reuse Feasibility Study, dated May 1984.	(See 3.1B.3a)	
3.1B.3c: Monitor grant programs that may offset high capital cost of water reuse projects.	Staff to work with legislative and water suppliers.	Staff currently negotiating an agreement with SCVWD that would offset 50-100% of the capital cost of our water reuse project. Also, legislative funding currently being pursued.
Goal 3.1C: Maintain financially stable water fund through a user-based fee system.		
Policy 3.1C.1: Establish rate structure that will ensure funding of capital improvements, operational and maintenance needs, and the development of an adequate reserve.		
3.1C.1a: Annually review rate structure.	On-going.	On-going.

Action Statement	Staff Responsibilities	Accomplishments
3.1C.1b: Establish appropriate reserves to ensure stable rates and capital improvement and replacement needs.	On-going.	On-going.
3.1C.1c: Annually review Ten-Year Plan for capital improvement and replacement needs.	On-going.	On-going.
Goal 3.1D: Ensure potable water meets all quality and health standards.		
Policy 3.1D.1: Ensure that backflow from potentially contaminated water services is prevented through an aggressive inspection program.		
3.1D.1a: Ensure that adequate backflow prevention devices are installed as required.	On-going.	On-going.
3.1D.1b: Monitor annual backflow device testing program.	On-going.	On-going.
3.1D.1c: Perform backflow investigations and inspections are required.	On-going.	On-going.
3.1D.1d: Investigate alternatives concerning the testing, inspection, and installation of backflow devices in order to enhance cooperation between the City and backflow device owners.		Possible alternatives include having the City take over ownership and maintenance of all privately owned backflow devices. This idea currently being studied.
Policy 3.1D.2: Develop a comprehensive water quality monitoring program that meets or exceeds all state and federal requirements while also meeting specific needs of City.		
3.1D.2a: Establish parameters to be tested for, together with specific testing frequencies and scheduling.	On-going.	On-going.
3.1D.2b: Provide adequate laboratory testing facilities.	On-going.	On-going.

Action Statement	Staff Responsibilities	Accomplishments
3.1D.2c: Provide adequate training for quality sampling and testing.	On-going.	On-going.
3.1D.2d: Provide the public with information relative to City's water quality program, bottled water, home water filtering devices, wells, etc.	On-going.	Annual water quality reports sent out to all residents and businesses each year.
3.1D.2e: Respond to customer concerns and inquiries.	On-going.	On-going.
3.1D.2f: Monitor state and federal legislation to ensure City's sampling and testing provedures meet all requirements.	On-going.	On-going.
3.1D.2g: Support legislation that enhances water quality.	On-going.	On-going.
3.1D.2h: Support legislation that establishes appropriate water quality standards.	On-going.	Successfully defeated a bill that would have required SFWD to construct a $700 million filtration plant.
Policy 3.1D.3: Develop an action plan to respond to, and protect from, underground water contamination.		
3.1D.3a: Monitor all known underground contaminations.	Public Safety	On-going.
3.1D.3b: Ensure responsible parties are taking all reasonable steps to clean up known underground contaminations.	Public Safety	On-going.
3.1D.3c: Ensure responsible enforcement agencies are taking all reasonable steps to have responsible parties clean up known underground contaminations.	Public Safety	On-going.

Action Statement	Staff Responsibilities	Accomplishments
3.1D.3d: Ensure all business and industry are complying with the City's hazardous materials storage ordinance.	Public Safety	Requires HMMP's from all industry, updated periodically.
3.1D.3e: Develop an emergency action plan to isolate and prohibit the delivery of known or suspected contaminated water to customers.	Public Works through consultant.	Action plan completed 1988. Revised plan submitted to DOHS July 1995.
3.1D.3f: Develop a program to notify customers of known or suspected contaminated water and of the City's action plan.	On-going.	On-going.
3.1D.3g: Work with the Santa Clara Valley Water District to identify all private wells in the City.	Report artesian wells to SCVWD.	Five artesian wells identified and corrected in 1995.
3.1D.3h: Advise owners of private wells of health risks, adequate quality testing, etc., and encourage proper abandonment of the wells where appropriate.	On-going.	On-going.
3.1D.3i: Encourage owners of private wells that do not have City water service to properly abandon their wells and hook up to the City's water system.	On-going.	On-going.
3.1D.3j: Support legislation that provides for protection from underground water contaminations, adequate resources for enforcement of cleanup activities, and clearly defines responsibilities at all levels of government in terms of cleanup and enforcement activities.	On-going.	On-going.

DEFINITIONS OF WATER RESOURCES SUB-ELEMENT ACRONYMS

ABAG	Association of Bay Area Governments
BuRec	Bureau of Reclamation
Cal Water	California Water Service Company
CCF	Hundred Cubic Feet
CCOR	California Code of Regulations
CCSF	City and County of San Francisco
CEQA	California Environmental Quality Act
CVP	Central Valley Project
CVPIA	Central VGalley ProjectImprovement Act
D-DBP	Disinfectants - Disinfection By-Products Rule
Delta	Sacramento/San Joaquin Delta
DHS	Department of Health Services (State)
DWR	Department of Water Resources (State)
EPA	Environmental Protection Agency (Federal)
ESWTR	Enhanced Surface Water Treatment Rule
GPD	Gallons Per Day
HH	Hetch Hetchy
ICR	Information Collection Rule
LCR	Lead and Copper Rule
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MGD	Million Gallons Per Day
SBA	South Bay Aquaduct
SCADA	Supervisory Control and Data Acquisition System
SCVWD	Santa Clara Valley Water District
SDWA	Safe Drinking Water Act
SFWD	San Francisco Water Department
SOC	Synthetic Organic Chemicals
SWP	State Water Project
SWTR	Surface Water Treatment Rule
TCR	Total Coliform Rule
THM	Trihalomethanes
VOC	Volatile Organic Chemicals
WPCP	Water Pollution Control Plant